Patent Claims

1. An internal combustion engine with fuel injection, having an intake line (2), in which a throttle element (6) is arranged, an exhaust system (3, 4, 5) and a gas conveying system having

- a turbine (7), which can be driven by an air stream and to which a turbine inlet line (9) and a turbine outlet line (10) are connected, and

- a pump (8), which can be driven by the turbine (7) and has a pump inlet line (11) and a pump outlet line (12), via which gas delivered by the pump (8) can be fed to the exhaust system (3, 4, 5),

characterized in that when the internal combustion engine (1) is starting up, the quantity of fuel injected into it can be set as a function of the delivery capacity of the pump (8).

2. The internal combustion engine as claimed in claim 1, characterized in that the turbine (7) can be driven by a part-stream of the combustion air taken in by the internal combustion engine (1) via the intake line (2), the part-stream being produced by a pressure gradient which is present across the throttle element (6).

3. The internal combustion engine as claimed in claim 1 or 2, characterized in that when the engine is starting up, the speed of the internal combustion engine (1) can be set before the fuel injection commences, by actuation of the internal combustion engine (1) or by actuation of an auxiliary unit assigned to the internal combustion engine (1).

4. The internal combustion engine as claimed in one of claims 1 to 3, characterized in that when the engine is

starting up, the throttle element (6) can be set as a function of a pressure in the intake line (2).

5. The internal combustion engine as claimed in one of the preceding claims, characterized in that the turbine (7) can be driven by an airstream which is generated by a gas conveying unit (15; 16) which is arranged in the turbine inlet line (9) or in the turbine outlet line (10) or is connected to the turbine inlet line (9) or to the turbine outlet line (10).

6. The internal combustion engine as claimed in claim 5, characterized in that the gas conveying unit is designed as an electrically driven gas conveying unit (15).

7. The internal combustion engine as claimed in claim 5, characterized in that the gas conveying unit is designed as an evacuable gas vessel (16) arranged in the turbine outlet line (10).

8. The internal combustion engine as claimed in one of the preceding claims, characterized in that the gas stream delivered by the pump (8) can be set as a function of an air/fuel ratio in the exhaust system (3, 4, 5).

9. The internal combustion engine as claimed in one of the preceding claims, characterized in that the gas stream delivered by the pump (8) can be fed to an exhaust manifold (3) assigned to the exhaust system (3, 4, 5) and/or direct to a catalytic converter (5) assigned to the exhaust system (3, 4, 5).

10. The internal combustion engine as claimed in claim 1, characterized in that exhaust gas can be fed to the pump (8) via the pump inlet line (11), and the exhaust-gas stream delivered by the pump (8) can be fed to the intake line (2).

11. The internal combustion engine as claimed in claim 1, characterized in that a reduced-pressure vessel (17) connected via the pump inlet line (11) can be evacuated by the pump (8).

12. A method for operating an internal combustion engine with fuel injection and having

- an intake line (2), in which a throttle element (6) is arranged,

- an exhaust system (3, 4, 5) and

- a gas conveying system, which comprises a turbine (7) that can be driven by an airstream and a pump (8) that can be driven by the turbine (7),

in which method, at least when the engine is starting up, gas delivered by the pump (8) is fed to the exhaust system (3, 4, 5), characterized in that when the internal combustion engine (1) is starting up, the quantity of fuel injected is set as a function of the delivery capacity of the pump (8).

13. The method as claimed in claim 12, characterized in that when the engine is starting up, before the fuel injection begins the throttle element (6) is held predominantly closed and is only opened after the pump has reached a minimum delivery capacity.

14. The method as claimed in claim 12 or 13, characterized in that the engine speed of the internal combustion engine (1) is increased as it is starting up before the fuel injection begins.

15. The method as claimed in one of claims 12 to 14, characterized in that the turbine (7), at least from time to time, is driven by an airstream which is delivered by a gas

conveying unit (15; 16) which is arranged in the turbine inlet line (9) or the turbine outlet line (10) or is connected to the turbine inlet line (9) or the turbine outlet line (10).

16. The method as claimed in one of claims 12 to 15, characterized in that the airstream delivered by the pump (8) is set as a function of an air/fuel ratio in the exhaust system (3, 4, 5).

17. The method as claimed in one of claims 12 to 16, characterized in that one of at least two addition points (13, 14) in the exhaust system (3, 4, 5) at which the airstream delivered by the pump (8) is added to the exhaust gas is selected as a function of the operating state of the internal combustion engine (1).

18. The method as claimed in claim 12, characterized in that the airstream delivered by the pump (8) cools a definable part of the exhaust system (3, 4, 5) if a predeterminable threshold value for a temperature in the exhaust system (3, 4, 5) is exceeded.

19. The method as claimed in claim 12, characterized in that the pump (8) at least from time to time removes exhaust gas from the exhaust system (3, 4, 5) and feeds it to the intake line (2).

20. The method as claimed in claim 12, characterized in that a reduced-pressure vessel (17) assigned to the internal combustion engine (1) is evacuated by the pump (8) via the pump inlet line (11) in order to operate a servo system operated by reduced pressure.